WHAT IS CLAIMED IS:

1. A bidirectional photothyristor chip, comprising:

a first photothyristor portion and a second photothyristor portion formed away from each other on a surface of one semiconductor chip; and

a channel isolation region formed on the surface of the semiconductor chip over almost the entire width thereof for separating a channel of the first photothyristor portion and a channel of the second photothyristor portion,

the channel isolation region extending in a direction intersecting with the channel of the first photothyristor portion and the channel of the second photothyristor portion.

2. The bidirectional photothyristor chip as claimed in claim 1, wherein

the respective photothyristor portions include a first diffusion layer that has a first conductive type and a second diffusion layer that has a second conductive type, and

the respective diffusion layers are disposed in parallel with the channel isolation region with the channel isolation region interposed therebetween.

3. The bidirectional photothyristor chip as claimed in claim 2, wherein

the first diffusion layer of the first photothyristor portion and the second diffusion layer of the second photothyristor portion are electrically connected to each other, while the second diffusion layer of the first photothyristor portion and the first diffusion layer of the second photothyristor portion are electrically connected to each other.

4. The bidirectional photothyristor chip as claimed in claim 1, wherein

the channel isolation region is constituted of a dicing groove formed on the surface of the semiconductor chip.

5. The bidirectional photothyristor chip as claimed in claim 1, wherein

the semiconductor chip is constituted of an N-type silicon substrate, and

the channel isolation region is constituted by including an oxygen doped semi-insulating polycrystalline silicon film doped with phosphorus formed on a surface of the N-type silicon substrate.

6. The bidirectional photothyristor chip as claimed in claim 1, wherein

the semiconductor chip is constituted of an N-type silicon substrate, and

the channel isolation region is constituted by including an oxygen-doped semi-insulating polycrystalline silicon film formed in contact with the surface of the N-type silicon substrate.

7. The bidirectional photothyristor chip as claimed in claim 1, wherein

the channel isolation region is constituted by including a short-circuit diode formed on the surface of the semiconductor chip.

8. The bidirectional photothyristor chip as claimed in claim 1, wherein

the respective photothyristor portions have an anode diffusion region and a cathode diffusion region, and

the anode diffusion region is disposed closer to a side of the channel isolation region than the cathode diffusion region.

9. The bidirectional photothyristor chip as claimed in claim 1, wherein

the respective photothyristor portions have an anode diffusion region, a gate photoreceptor diffusion region and a cathode diffusion region, and

the gate photoreceptor diffusion region is disposed closer to a side of the channel isolation region than the anode diffusion region.

10. The bidirectional photothyristor chip as claimed in claim 1, wherein

the respective photothyristor portions include a PNPN section constituted of an anode diffusion region that has one conductive type out of N type and P type, a substrate that has the other conductive type out of N type and P type, a gate diffusion region that is opposed to the anode diffusion region and has the one conductive type, and a cathode diffusion region that is formed oppositely to the anode diffusion region inside the gate diffusion region and has the other conductive type, and

a Schottky barrier diode is formed in between the gate diffusion region and the substrate, that constitute the PNPN section.

11. The bidirectional photothyristor chip as claimed in claim 10, wherein

the Schottky barrier diode is opposed to the cathode diffusion region and is also formed with a length equal to that of the cathode diffusion region and with a prescribed width.

12. The bidirectional photothyristor chip as claimed in claim 11, wherein

an area of the Schottky barrier diode is changed by changing the width of the Schottky barrier diode, and

a forward voltage of the Schottky barrier diode is controllable by changing the area of the Schottky barrier diode.

13. The bidirectional photothyristor chip as claimed in claim 12, wherein

the width of the Schottky barrier diode is so set that a forward voltage of the Schottky barrier diode is lower by not smaller than 20 mV than the forward voltage between the gate diffusion region and the substrate.

14. The bidirectional photothyristor chip as claimed in claim 12, wherein

a distance between the two diffusion regions located with interposition of the Schottky barrier diode is set to a distance at which the Schottky barrier diode can effect pinch-off within its withstand voltage.

15. The bidirectional photothyristor chip as claimed in claim 1, wherein

the respective photothyristor portions include a PNPN section constituted of an anode diffusion region that has one conductive type out of N type and P type, a substrate that has the other conductive type out of N type and P type, a gate diffusion region that is opposed to the anode diffusion region and has the one conductive type, and a cathode diffusion region that is formed oppositely to the

anode diffusion region inside the gate diffusion region and has the other conductive type,

a gate resistance and a switching device are connected in parallel in between a base and an emitter electrode of an NPN transistor which is constituted of the cathode diffusion region, the gate diffusion region and the substrate and also constitutes the PNPN section, and,

a control terminal of the switching device is connected to a base of a PNP transistor which is constituted of the anode diffusion region, the substrate and the gate diffusion region and also constitutes the PNPN section.

16. The bidirectional photothyristor chip as claimed in claim 1, wherein

the semiconductor chip is constituted of an N-type silicon substrate, and

on a back surface of the N-type silicon substrate, an N^+ layer doped with phosphorus at a concentration of not smaller than 10^{15} cm^{-3} and not larger than $10^{18}cm^{-3}$ is formed.

17. The bidirectional photothyristor chip as claimed in claim 1, further comprising at least any two of:

a construction of the channel isolation region in the bidirectional photothyristor chip as claimed in any one of Claims 4 to 7;

a construction of the PNPN section in the bidirectional photothyristor chip as claimed in claim 9 and a Schottky barrier diode; and

a construction of the N^+ layer on the back surface of the N-type silicon substrate in the bidirectional photothyristor chip as claimed in claim 16.

18. A light-fired coupler comprising the bidirectional photothyristor chip as claimed in any one of claims 1 to 17 and a light emitting diode.

19. A solid state relay comprising the light-fired coupler as claimed in claim 18 and a snubber circuit.